

# **SECTION 1**

# **SNOW REMOVAL OPERATIONS AND GENERAL INFORMATION**

## **I. MISSION**

The California Department of Transportation (Caltrans) District 3 Maintenance Program's mission is to provide the motoring public with the safest possible travel way during snow and adverse weather conditions with minimal delays and inconvenience.

## **II. OVERALL RESPONSIBILITIES AND COMMAND STRUCTURE**

### **A. Responsibilities**

Caltrans and the California Highway Patrol (CHP) share the responsibility for ensuring the safe and efficient use of the State's highway transportation system through the District's mountain areas.

Our goal is to keep the motoring public moving through the District's snow areas limiting the necessity of tire chains or excessive delays, while at all times maintaining the safety of our employees and customers.

Whenever Caltrans becomes aware of a highway condition (external, peripheral, or adjacent) that may have an adverse effect to the public safety or health, mitigation measures, such as traffic controls or highway closure, must be considered.

### **B. Command Structure**

The Incident Command System (ICS) will be the system of choice for events governed by incidents outside of normal snow removal operations, for example in the case of major traffic accidents or weather catastrophes.

A Unified Command will be established for joint responses and a consensus sought prior to initiating action in these cases.

General Order 100.43 – Joint Operational Policy Statement, Department of Transportation/California Highway Patrol, and the Joint Adverse Highway Conditions Response Plan shall be the governing documents for the operations outlined in this plan.

## **III. DISTRICT 3, SNOW REMOVAL OPERATIONS PROFILE**

### **A. Overview**

Caltrans District 3 is responsible for snow removal operations on approximately 1,330 lane miles of highway over ten routes in seven counties. Among these are the heavily used, politically sensitive and historic routes of Interstate 80 over Donner Pass and US 50 over Echo Summit.

Donner Pass, Interstate 80: Interstate 80 is the largest goods movement and tourist corridor in Northern California. Within the District, Interstate-80 has 565 lane miles of travel way that typically receives snow ranging in elevation from 4000 feet to 7239 feet at Donner Pass. The average annual snowfall on Donner Pass is 429.63 inches with an annual average snow pack of 149.95 inches.

Echo Summit, US 50: US Highway 50 in District 3 has 164 lane miles of travel way that typically receives snow ranging in elevation from 3000 feet to 7382 feet at Echo Summit. The average annual snowfall on Echo Summit is 412 inches with an annual average snow pack of 106 inches. Echo Summit is also prone to snow avalanches requiring avalanche control efforts periodically during the winter.

There are an additional 600 lane miles of lane miles on secondary routes that require snow removal operations that under District 3's canopy of responsibility. There are several Sierra communities within these 600 lane miles where the state highway also doubles as their main street. Removing the snow from these main street areas sometimes requires it to be loaded into trucks and hauled to approved snow storage sites. The District is also responsible to remove snow from several routes within the Lake Tahoe Basin where extra ordinary steps are taken by the District to help preserve this environmentally sensitive location.

Mountain weather conditions significantly impact traffic operations, accident frequency, and levels of service, especially during winter season snowstorms. Traffic accidents and snow related road closures periodically curtail traffic movement. Each winter, there are approximately a dozen weekends that experience bad weather conditions. The intensity, timing and duration of Pacific Storm systems continue to baffle even the most seasoned meteorologists. To counter this, (particularly when heavy traffic volumes are anticipated) District 3 goes into a high state of readiness just prior to the earliest ETA of the forecasted storm.

**B. Winter Staffing**

District 3's winter staffing during the months of snow removal operations historically has been composed of approximately 650 employees. The 2009/10 winter season staffing is projected to be 600 employees, which includes 150 temporary employees i.e. P.I (permanent intermittent) T.A.U. (temporary authorization).

These 600 positions range in classification from Maintenance Area Superintendent to Cook I. The vast majority of these positions are Caltrans Equipment Operators and Highway Maintenance Workers who operate the snow removal equipment and perform manned chain control operations.

**C. Equipment**

The District 3 Maintenance mobile fleet is comprised of approximately 872 on-highway and off-highway vehicles and equipment. Approximately 355 of these units representing approx. 41% of that fleet are utilized for the District's snow removal operation. The District Equipment Shop has a winter preparedness plan to have the snow removal equipment ready for service and in place at the assigned maintenance stations by the end of November.

The following is a breakdown of the vehicles used for winter operations. The numbers of equipment can vary due to major break down, replacements and reassignments.

140 Support Units  
44 Plow Trucks  
63 Plow/Sander Units  
44 Motor Graders  
36 Rotary Plows  
25 Loaders

The District Equipment Shop dedicates its entire workforce of 61 people to support the District 3 snow removal operation. Comprised within those numbers are two Sub-shops located strategically within the mountainous areas in close proximity to Highway 80 in Truckee and Highway 50 in South Lake Tahoe. Twice a year (Spring and Fall) the Main Shop in Marysville and the South Lake Tahoe Sub-shop perform body changes (approx. 67) of haul dump beds to sander beds and back again, to fully utilize the truck cab and chassis for seasonal needs.

There are 14 (14) personnel, including a supervisor, leadworker and three (3) parts personnel that report to the Truckee Sub-shop. Three (3) of those are field positions located at Downieville, Whitmore and Kingvale. When authorized, two (2) Permanent Intermittent hires are called to report for the winter months. With exception and approval, other temporary help options (e.g. L.T. and T.A.U.) are implemented to augment and balance the workload to workforce ratio at this location. There is also 1 (1) Heavy Equipment Mechanic Apprentice at the Truckee Sub-Shop.

There are eight (8) personnel, including a supervisor, leadworker and one (1) Parts person that report to the South Lake Tahoe Sub-shop. Of those, one is a Resident field position located in Placerville and one is a Traveling field position based out of the Sub-shop covering the local Tahoe and Kyburz areas.

Personnel from the Main Shop in Marysville are also dispatched, on a rotational basis, to the snow areas when needed. In addition, when the workload exceeds the District Shop's capacity to maintain a reasonable backlog of work, the Shop Superintendent solicits other neighboring and statewide District Shops including the Headquarters Shop for assistance.

#### **D. Facilities**

District 3 has 13 maintenance station facilities located in snow areas that perform snow removal operations. These facilities include three dormitories/kitchens used primarily for those engaged in snow removal efforts. The Whitmore and South Lake Tahoe dormitories each feed and board up to 50 people and the Kingvale dormitory will feed and board up to 168 people. In the past, Caltrans and other agencies use the Kingvale dormitory from May through September as "Kingvale U", a training academy. At this training academy, state employees from all over California are trained in a number of curriculums. All of the facilities have been used in times of emergency for medical treatment and shelter during snowstorms and forest fires.

#### **E. Communications**

The Regional Traffic Management Center (RTMC) in Sacramento and the Kingvale Snow Communications Center (Kingvale KSCC) located at the Kingvale Maintenance Station are staffed around the clock during the winter months. The Kingvale center handles all maintenance dispatch and traffic operation functions for Interstate 80, the North Tahoe Basin, and the secondary snow routes within the Sutter Sierra Region. The Sacramento RTMC handles calls for US 50 and the remainder of the District. Updates from the field will be relayed to the Traffic Management Centers and then be forwarded to Headquarters Dispatch for distribution as required. Numerous Changeable Message Signs (CMS) and Highway Advisory Radio's (HAR's) are located along Interstate 80, US 50, and in the Tahoe Basin snow corridors. These systems provide current highway conditions to the public in a timelier manner than have been possible in the past.

This is a proprietary application used to collect and display weather data from the Roadway Weather Information Stations. (RWIS) A server is located at the RTMC in the form of a Statewide server for all the Districts. The current and historical data from these systems can be accessed through the website at:

## Caltrans Highway Internet Reporting Program (CHIRP)

[http://www.dot.ca.gov/dist3/projects/chainmap/chain\\_control\\_map.pdf](http://www.dot.ca.gov/dist3/projects/chainmap/chain_control_map.pdf)



**F. Chain Controls**

The following chain control classifications are implemented in District 3 as determined necessary by the District 3, Field Maintenance Staff, to ensure the safe travel of the motoring public during storms. The use of these chain control classifications or combination of classifications will vary from route to route and storm to storm.

R-1 - Chains or snow tread tires required (snow tires must have a tread depth of 6/32 with an “M & S” imprint on the sidewall).

R-2 - Chains required on all vehicles except four-wheel (4WD) or all wheel drive (AWD) vehicles with snow tread tires on all four wheels.

Truck Minimum/Modified Max – These chain requirements only apply to dual drive trucks and are less restrictive than the traditional chain requirements. These lesser restrictions are allowed only when field supervision determines conditions warrant.

R-3 - Chains required on all vehicles with no exceptions. This condition is rarely imposed.

**G. Chain Installers**

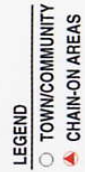
District 3 issued 134 encroachment permits for the 2009/10 winter season to individuals desiring to install or remove tire chains for a fee on vehicles along the district’s snow routes.

The installer's are required to display a sign 12" x 24" up to 18"x 36" - 4" high letters only...advising motorists in advance of their fee for providing their services. Failure to display their sign to the traveling public is in violation of their permit.

This year’s rate is \$30.00 to install auto chains and \$15.00 to remove them. Truck rate is \$20.00 per wheel to install truck chains and \$10.00 per wheel to remove them. Chain installers are not allowed to sell or rent any traction devices.



US 50 Chain Control Check Point at Twin Bridges





**IV. REGION SNOW REMOVAL PROFILES****A. Sutter Sierra Region Overview and Route Priorities**

The Sutter/Sierra Region consists of four maintenance areas. Two of these areas, Donner Pass and Gold Country, have the primary snow removal responsibilities in the region. The Donner Pass Maintenance Area is responsible for the Interstate 80 corridor and the Gold Country Area is responsible for the majority of the secondary routes in the region. The remaining two areas in the region support the snow areas by supplying resources during storm events. The amount of resources sent by the non snow areas to assist with snow removal operations is determined by the prediction of both the size of the storm event and the lowest elevation that snow is expected to fall. A large snowstorm that falls at a low elevation requires the services of approximately 400 employees. Sutter Sierra Region also augments its own personnel with additional employees from District 4 as laid out in a memo of understanding between the two districts.

Donner Pass Maintenance Area consists of Auburn, Whitmore, Kingvale, and Truckee East crews.

Gold Country Maintenance Area consists of Nevada City, Downieville, Sierraville, Truckee North, and Tahoe City crews.

North Valley Maintenance Area consists of Chico North, Chico South, Marysville, Marysville L/S, Colusa, and Willows crews.

Special Crews Maintenance Area consists of Stencil, Stripe, Tree & Spray, Sign, Bridge, Storm Water, Statewide Thermoplastic, and Statewide Bridge Inspection Crews.

**Sutter/Sierra Region Route Priorities**

The following is a prioritized list of the snow routes in the Sutter/Sierra Region, with the number 1 being the highest priority route. In the event that reductions in snow removal services may become necessary, the lower priority routes will receive the reductions first in an effort to maintain the service on the higher priority routes.

1. Interstate 80
2. SR 89 south of Truckee
3. SR 28
4. SR 20 east of Washington Jct.
5. SR 89 south of Tahoma
6. SR 267 south of Northstar
7. SR 32 east of Chico
8. SR 89 north of Truckee
9. SR 49 north of Nevada City

**1. Donner Pass Maintenance Area**

The Donner Pass Area snow removal operation is responsible for clearing a 90-mile long section of Interstate 80, from the town of Newcastle to the California/Nevada State Line. There are approximately 45 permanent employees assigned to the Donner Pass Area. During major storms, this number swells to over 200 workers, which include temporary, intermittent, and



borrowed employees from other Caltrans Districts. The Donner Pass snow removal effort is based out of four Caltrans Maintenance Stations – Auburn, Whitmore, Kingvale, and Truckee.

**A. Auburn Maintenance Station**

The Auburn Maintenance Station is situated along Highway 49 in historic Auburn at an elevation of 1400-ft. This station primarily plays a support role for all but the lowest snowstorms. The Auburn crew takes care of I-80 between Newcastle and Gold Run and also performs truck screening operations.

Staffing:

Regular Shifts – 8

Average Storm Shifts – 18

Max Storm Shifts – 20

Snow Equipment:

Support Vehicles – 10

Plows – 1

Plow/Sanders – 4

Loaders – 2

Motor graders – 0

Rotary Plows – 0

**B. Whitmore Maintenance Station**

The Whitmore Maintenance Station is located along Interstate 80 near Blue Canyon at an elevation of nearly 5,000-ft. The Whitmore crew is responsible for the snow removal and manned chain control operations for the mid-elevation of the Western Slope of I-80. A low elevation storm can have the Whitmore personnel covering from Applegate, at an elevation of 1900-ft, to the Junction of State Route 20 and I-80, at 5600-ft. The size of the crew at Whitmore ranges in conjunction with the size and elevation of each storm. Up to 50 workers are needed to fight a low elevation storm with large accumulations of snow. In addition to the maintenance station, during the winter months there is a 50-bed dormitory and 24 hour, 7 days a week kitchen for housing and feeding snow removal personnel.

Staffing:

Regular Shifts – 29

Average Storm Shifts – 32

Max Storm Shifts – 64

Snow Equipment:

Support Vehicles – 8

Plows – 8

Plow/Sanders – 6

Loaders – 2

Motor graders – 5

Rotary Plows – 4

Tow Trucks – 1

TMT Truck – 1

**C. Kingvale Maintenance Station**

The Kingvale Maintenance Station is situated along Interstate 80 west of the Donner Summit at an elevation of 6,200-ft. Kingvale is the largest maintenance station in the District and is primarily responsible for snow, ice, and chain control operations on a 20-mile stretch of I-80 between Yuba Gap and the Donner Lake Interchange west of Truckee. Kingvale utilizes up to 110 employees during major storms, borrowing employees from the San Joaquin and Sacramento Valleys as well as the Bay Area to fill this need. The Kingvale Dormitory has 150 beds available and the kitchen is open 24 hours a day, 7 days a week to feed and house the work force. The maintenance crew works a 24-hour, 7 day a week shift starting in November and ending in April. The start and end dates may fluctuate with weather conditions.



Kingvale Maintenance Station digging out .....photo by Pat Day

This maintenance station also houses Kingvale University, where workers from all over the state are trained for snow removal. Kingvale is where the latest snow removal technology is tested and deployed. These technologies include snow and rotary plows that are equipped with radar collision-avoidance devices that are guided by magnets imbedded in the pavement.

**Staffing:**

Regular Shifts – 33

Average Storm Shifts – 56

Max Storm Shifts – 90

**Snow Equipment:**

Support Vehicles – 12

Plows – 4

Plow/Sanders – 10

Loaders – 3

Motor graders – 11

Rotary Plows – 9

Tow Truck – 1

Fuel Truck – 1  
TMT Truck - 1

**D. Truckee East/West Maintenance Station**

The Truckee Maintenance Station is located in the City of Truckee adjacent to Interstate 80 at an elevation of 5800-ft. This station is home to 2 crews, the Truckee East/West crew and the Truckee North/South Crew. The East/West crew works exclusively on Interstate 80 and is responsible for snow removal on the “eastside” of the Donner Pass. This area encompasses a 24-mile stretch of I-80 from the Donner Lake Interchange to the Nevada State Line. This crew also has the responsibility for the chain control and truck screening operations for West Bound Interstate 80. The crew activates a winter 24 hours, 7 days a week schedule starting in November and ending in April. The winter season start and end times may vary on each end depending on the weather conditions.

**Staffing:**

Regular Shifts – 30  
Average Storm Shifts – 38  
Max Storm Shifts – 68

**Snow Equipment:**

Support Vehicles – 9  
Plows – 5  
Plow/Sanders – 8  
Loaders – 2  
Motor graders - 6  
Rotary Plows – 3

**E. Kingvale Snow Communication Center**

The Kingvale Snow Communications Center (KSCC), located at the Kingvale Maintenance Station, coordinates all snow operations along the I-80 corridor and the secondary snow routes within the Sutter/Sierra Region. The Kingvale Communications Center is in operation during the winter months only and is staffed with six dispatchers and two dispatch supervisors. The KSCC coordinates all radio traffic in the mountain areas maintained by the Sutter/Sierra Region as well as controls the many Changeable Message Signs (CMS) and Highway Advisory Radios (HAR) that advise motorists of the latest conditions on I-80. During the periods when the KSCC is not in operation, the Regional Transportation Management Center (RTMC) assumes their responsibilities.

**Staffing:**

Dispatchers: 6  
Dispatch Supervisors: 2

**F. I-80 Chain Control Information**

THE SPEED LIMIT ON I-80 DURING CHAIN CONTROL IS 30 MPH.

Chain-up areas are located at selected interchanges along I-80 where the gradient is minimal for a distance of 1 ½ - 2 miles in advance of the interchange. This allows motorists to chain up in as flat of an area as possible, thereby increasing their safety and expediting their chain-on effort.

Turnable signs are installed in advance of the chain control area, at the chain checkpoint, and on the on ramps to the freeway to advise motorists when chain control is in effect. During heavy traffic periods, severe congestion occurs both from back up at the chain checkpoint and from motorists blocking lanes as they install their chains. CHP and Caltrans patrol these areas in an effort to control congestion.

Chain control checkpoints are set up in advance of the chain control areas. These checkpoints are usually staffed with two personnel that work together to visually inspect vehicles entering the chain control area for compliance of the current chain control requirement. These check points have proven to be effective in reducing spin-outs and accidents, facilitating the movement of traffic through chain control areas.

During storms, Caltrans operates truck screens at Applegate eastbound and at Mogul (near Verdi, Nevada) westbound to insure that all trucks crossing Donner Summit are properly equipped with chains and are advised of current road conditions. Caltrans also meters vehicles at Applegate, Truckee, and Gold Ranch when heavy traffic volume combines with chain control. In addition, during storms with extremely busy traffic periods, trucks may be held at the truck screening locations to facilitate the movement of passenger vehicles and light trucks. All of these procedures have proven very effective in reducing overall delay time for motorists, along with their exposure and frustration from extended delays in the snow.

#### **G. I-80 Public Information**

Caltrans operates 13 Highway Advisory Radios (HAR) along I-80 which broadcast on either AM 1530 or AM 1610. These are located at Antelope, Newcastle, Clipper Gap, Colfax, Gold Run, Whitmore, Cisco, Kingvale, Donner Summit, Truckee, Tahoe City, Floriston and Boomtown in the State of Nevada.

There are 21 overhead electronic Changeable Message Signs (CMS). Eastbound there are nine located at Dixon, Chiles, Madison, Newcastle, Auburn, Gold Run, Baxter, Blue Canyon and Rainbow. Westbound there are 12 located at Sparks, Reno and Verdi, Nevada; Prosser Village, Truckee, Donner Lake Interchange/Vista Point, Kingvale, Eagle Lakes, Blue Canyon (2), Gold Run and Madison. Computers located at Kingvale and Sacramento control these signs.

Caltrans also uses four portable CMS's to alert motorists to problems

#### **H. I-80 Additional Information**

A. For the safety and convenience of the traveling public, Caltrans maintains four roadside rest areas over Donner Pass, located east and westbound at Gold Run and Donner Summit.

Caltrans is in negotiations with other governmental agencies and private industry concerns to continue operation of the pusher truck program this year out of Kingvale and Whitmore. These push trucks are radio equipped and patrol the summit to assist any trucks having trouble making it over the summit. In addition, Caltrans operates two four wheel-drive tow trucks, which patrol during storms to assist in clearing the roadway when motorists have problems. The Caltrans tow trucks will tow vehicles out of narrow situations to a safe location. Commercial tow trucks then

provide any additional services needed. The big rig pusher trucks and Caltrans tow trucks are implemented to insure speedy remedy or removal of vehicles that block the travel way.



Pusher Truck on Interstate –80

## **2. Gold Country Maintenance Area**

The Gold Country Maintenance Area is responsible for snow removal operations on all secondary routes within the Sutter/Sierra Region. The Gold Country Area snow removal operations are performed out of five different maintenance stations with the Area Superintendent's office located at the Truckee Maintenance Station.

### **A. Truckee North/South Maintenance Station**

The Truckee Maintenance Station is located in the City of Truckee adjacent to Interstate 80 at an elevation of 5800-ft. This station is home to two crews, the Truckee East/West crew and the Truckee North/South Crew. The North/South crew is responsible for snow and ice operations on segments of State Routes 89 and 267 that run North and South from Truckee. These routes range in elevations from 5800-ft to 7179-ft. The crew activates a winter 24 hours – 7 days a week schedule, starting in November and ending in April. The start and end times may vary depending on the weather patterns.

#### **Staffing:**

Regular Shifts – 22

Average Storm Shifts – 22

Max Storm Shifts – 28

#### **Snow Equipment:**

Support Vehicles – 5

Plows – 3

Plow/Sanders – 5

Loaders – 1

Motor graders – 3

Rotary Plows – 2

### **B. Tahoe City Maintenance Station**

The Tahoe City Maintenance Station is located on State Route 89 in Tahoe City, on the North Shore of Lake Tahoe at an elevation of 6230. Tahoe City Maintenance is responsible for snow

removal operations along portions of State Routes 89 and 28 that parallel the North and West shores of Lake Tahoe. The Tahoe City crew is also responsible for a portion of State Route 89 between Tahoe City and Squaw Valley. The crew monitors this section's avalanche activity in the proximity of Squaw Valley. This crew works a winter 24 hours – 7 days a week schedule, starting in November and ending in April. The timeline may vary on each end depending on the weather.

**Staffing:**

Regular Shifts – 22

Average Storm Shifts – 22

Max Storm Shifts – 26

**Snow Equipment:**

Support Vehicles – 3

Plows – 3

Plow/Sanders – 6

Loaders – 2

Motor graders – 3

Rotary Plows – 2

**C. Sierraville Maintenance Station**

The Sierraville Maintenance Station is situated along State Highway 89 in Sierra Valley, approximately 25 miles North of Truckee at an elevation of 4900-ft. This station is responsible for snow operations on segments of State Routes 89 & 49. The elevations of these routes range from 4900 to 6700-ft. The crew activates a winter 24 hours – 7 days a week schedule, starting in November and ending in April. This timeline may vary on each end depending on the weather.

**Staffing:**

Regular Shifts: 14

Average Storm Shifts – 14

Max Storm Shifts – 14

**Snow Equipment:**

Support Vehicles – 5

Plows – 2

Plow/Sanders – 3

Loaders – 1

Motor graders – 1

Rotary Plows – 2

**D. Downieville Maintenance Station**

The Downieville Maintenance Station is located along State Highway 49, 2.5 miles North of the town of Downieville, at an elevation of 3000-ft. The Downieville Maintenance crew is responsible for snow and ice control work along 50 miles of State Route 49, ranging in elevations from 3000 to 6700-ft. In addition, this crew monitors for mud and rockslide activities in their area. The crew activates a winter 24 hours – 7 days a week schedule, starting in November and ending in April. This timeline may vary on each end of the season depending on the weather.

**Staffing:**

Regular Shifts – 14

Average Storm Shifts – 14

Max Storm Shifts – 14

**Snow Equipment:**

Support Vehicles – 3

Plows – 3

Plow/Sanders – 3

Loaders – 2

Motor graders – 1

Rotary Plows – 1

**E. Nevada City Maintenance Station**

The Nevada City Maintenance Station is situated along State Highway 49/20 & 174 at an elevation of 2700-ft in the City of Nevada City. The Nevada City Crew is responsible for snow and ice operations on portions of State Routes 49, 20 and 174, totaling approximately 80 centerline miles. In addition to snow and ice, this area is also monitored for rock and mud slides. This crew activates a winter 24 hours – 7 days a week schedule, starting in November and ending in April. The timeline may vary on each end of the season depending on the weather.

**Staffing:**

Regular Shifts – 16

Average Storm Shifts – 16

Max Storm Shifts – 28

**Snow Equipment:**

Support Vehicles – 7

Plows – 1

Plow/Sanders – 7

Loaders – 2

Motor graders – 2

Rotary Plows – 2

**B. Sunrise Region Snow Operations Overview and Route Priorities**

The Sunrise Region consists of four maintenance areas.

West Area consists of Woodland, West Sacramento, Esparto, Northgate, Northgate L/S and the Sacramento Fence and Guard Rail crews.

Central Area consists of Sunrise Maintenance, Sunrise Landscape, Sunrise Tree & Spray, Roseville, Elk Grove, and Elk Grove L/S crews.

Special Crews West consists of Sunrise Bridge, Sacramento Electric, Auburn Electric, East Electric, and Sacramento Electric Special crews.



South Lake Tahoe area consists of the South Lake Tahoe, Kyburz and Placerville crews. This area has the responsibility for all of the snow removal operations in this region.

#### Sunrise Region Route Priorities

The following is a prioritized list of the snow routes in the region, with the number 1 being the highest priority. In the event that reductions in snow removal services may become necessary, the lower priority routes will receive the reductions first in an effort to maintain the service on the higher priority routes.

1. US-50
2. SR 89 South of Meyers
3. SR 89 North of South Lake Tahoe
4. SR 49 North of Placerville
5. SR 193 North of Placerville
6. SR 49 South of Placerville

### **B. South Lake Tahoe Maintenance Area**

The South Lake Tahoe snow removal operation is based out of three Caltrans Maintenance Stations located in Placerville, Kyburz and South Lake Tahoe. The area's primary snow removal responsibility is clearing an 80 mile-long section of U.S. Highway 50 from the Sacramento/El Dorado county line to the Nevada state line. The area also is responsible for snow and ice operations on portions of the secondary State Routes 89, 49, and 193. The elevation of these secondary routes ranges from 1000-ft to 7700-ft. This area also requires patrols for occasional rock and mudslides. There are approximately 58 permanent and temporary employees assigned to the South Lake Tahoe Area during the winter months. During major storms, this workforce can swell to over 110 workers. To fill this need, employees are borrowed from the other areas and within the region and the District. All of the areas stations operate a 24 hour – 7 day a week schedule starting in November and ending in April. This time line may vary on each end at each location depending on weather conditions.

#### **1. Placerville Maintenance Station**

The Placerville Maintenance Station is situated along U.S. Highway 50 in historic Placerville at an elevation of 2,000-ft. This station is primarily responsible for low-elevation snow and ice operations on a 40-mile stretch of U.S. Highway 50, from El Dorado Hills to Riverton. Elevations in this area range from 1,000-ft to 4,000-ft. The Placerville Crew is also responsible to perform snow and ice operations on segments of State Highways 49 and 193.

#### Staffing:

Regular Shifts – 16

Average Storm Shifts – 26

Max Storm Shifts – 46

Snow Equipment:

Support Vehicles - 12

Plows – 3

Plow/Sanders – 6

Loaders – 3

Motor graders – 2  
Rotary Plows – 0

## **2. Kyburz Maintenance Station**

The Kyburz Maintenance Station is situated along U.S. Highway 50 at an elevation of 4,100-ft. This station is responsible for mid-elevation snow, ice, and chain control operations, on a 20-mile stretch of U.S. Highway 50 from Riverton to Twin Bridges, on the western slope of the Echo Summit. In addition to snow and ice, this area is also patrolled for rock and mudslide activity. Elevations in this area range from 2,000-ft to 6,000-ft. For the 2004-05 snow season, the Kyburz crew is working in coordination with the Placerville Maintenance crew in an effort to streamline operations by sharing resources.

### Staffing:

Regular Shifts – 16  
Average Storm Shifts – 24  
Max Storm Shifts - 24

### Snow Equipment:

Support Vehicles – 7  
Plows – 3  
Plow/Sanders - 4  
Loaders – 2  
Motor graders - 2  
Rotary Plows – 2

## **3. South Lake Tahoe Maintenance Station**

The South Lake Tahoe Maintenance Station is situated near the junctions of State Highways 50 and 89 in Meyers, just west and South of Lake Tahoe, at an elevation of 6,400-ft. This crew is responsible for snow and ice operations on State Highway 89 and a 20-mile stretch of U.S. Highway 50 from Twin Bridges to the Nevada state line. This section ranges in elevation from 6,000-ft to 7,300-ft. A five-mile portion of US-50 falls within the City of South Lake Tahoe. All cumulative snow that falls within this area is plowed to the center of the highway, loaded into trucks, and hauled to an approved snow storage site. The South Lake Tahoe Maintenance crew is also responsible for the snow and ice operations from State Highway 89 from the Alpine/El Dorado County Line to Emerald Bay. In addition, this crew performs avalanche control work on Highway 50 at the Echo Summit, when conditions dictate. The station has a dormitory/kitchen, which operates 16 hours a day, to house and feed the snow removal crew.

### Staffing:

Regular Shifts – 26  
Average Storm Shifts – 40  
Max Storm Shifts - 40

### Snow Equipment:

Support Vehicles - 16

Plows – 3  
Plow/Sanders - 9  
Loaders – 4  
Motor graders – 7  
Rotary Plows – 7

#### **4. Regional Transportation Management Center**

The Regional Transportation Management Center (RTMC) is located in Rancho Cordova. The RTMC coordinates all snow operations along the Highway 50 Corridor as well as all of the other snow affected routes in Eldorado County. With a staff of seven dispatchers and a dispatch supervisor, the TMC monitors all communications in the mountain areas of the Sunrise Region. The dispatchers coordinate with traffic technicians who control the many Changeable Message Signs (CMS) and Highway Advisory Radios (HAR) that advise motorists of the latest traffic conditions on Highway 50.

#### **5. US-50 Chain Control Information**

Chain-up areas are located at selected locations along US-50 and positioned in four lane sections of travel way where the gradient is minimal for a distance of approximately one-mile in advance of the chain control checkpoint. This allows motorists to chain up in as flat of an area as possible, thereby increasing their safety and expediting their chain-on effort. Turnable signs are installed in advance of the chain control area, at the chain checkpoint, and on the on-ramps of the freeway section to advise motorists when chain control is in effect and to travel at 25 miles per hour. During heavy traffic periods, severe congestion may occur at the chain up locations from both a back up at the chain checkpoint and from motorists blocking lanes as they install their chains. CHP and Caltrans patrol these areas to control congestion.

Caltrans also meters vehicles at Sly Park, Sand Flat, and Twin Bridges when heavy traffic volume combines with chain control. This has proven very effective in reducing overall delay time for motorists.

## **VII. NEW TECHNOLOGIES & PRODUCTS**

### **A. Ice Slicer Deicing Material**

The use of Ice Slicer was initiated during the 2004/5 winter season and continues to be tried and tested at select locations in the district. Ice Slicer is a deep mined salt from Redmond Utah. It differs from regular sea salt (white salt) because it naturally contains additional minerals and elements that enable it to perform better in colder conditions than white salt. This should result in the need for less use of traditional de-icers and abrasives. This is a savings, of not only from the direct cost of purchasing less volumes of these products, but also on the cost of cleaning up these materials with sweepers and drain cleaning trucks.

### **B. Road Watch Temperature Gauges**

Continued from previous snow seasons District 3 Maintenance continues use of these high tech temperature gauges to include most plow/sander trucks this winter. The Road Watch Gauge monitors pavement temperature in addition to ambient temperature. This helps remove the guesswork from when de-icers and abrasives are needed, thereby saving these materials from being applied unnecessarily.



Road Watch gauge in operation

### **C. Snow Removal Operations, Levels of Service (SNOW LOS)**

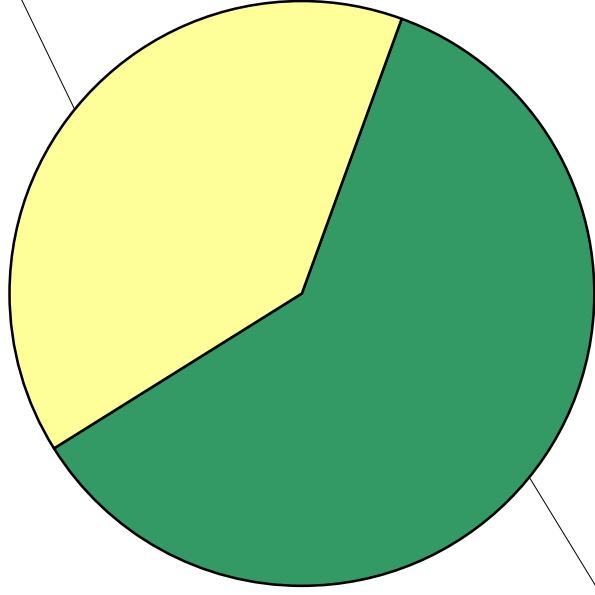
The current Snow and Ice Levels of Service (LOS) have been in development since 2004. This new process has been refined to include attributes important to the Department's Strategic Goals and Objectives. A high emphasis on mobility was incorporated to develop the methodology to report the Snow and Ice LOS.

SNOW LOS is a statewide pilot program to develop performance standards in order to measure the effectiveness of the department's snow removal efforts on high traffic volume routes that require snow removal operations. This project is based on the department's goal "to improve mobility". The main rating element is the percentage of time the route was available to traffic during storm periods, from November through April.

Interstate 80 and route US 50 have been included in a Caltrans Snow Removal Level of Service pilot project (SNOW LOS). This winter, in addition to Interstate 80 and US 50 in Eldorado County, State Route 32 in Butte County and State Route 20 in Nevada County will be included in the project.

# **FY 2008 - 2009 District 3, Route 80** **Snow and Ice Level of Service**

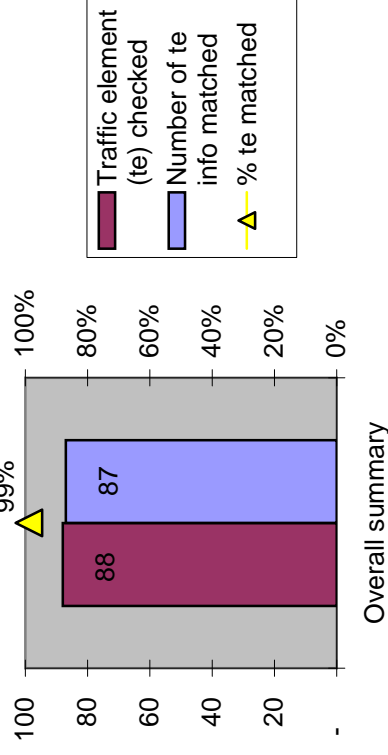
total hrs of non-Chain Control, 322.8 , 40%



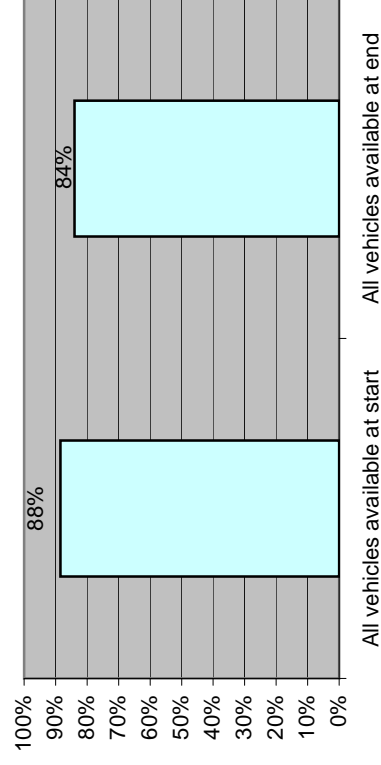
total hrs of Chain Control (cc), 493.0 , 60%

total hrs of Chain Control (cc)  
total hrs of non-Chain Control

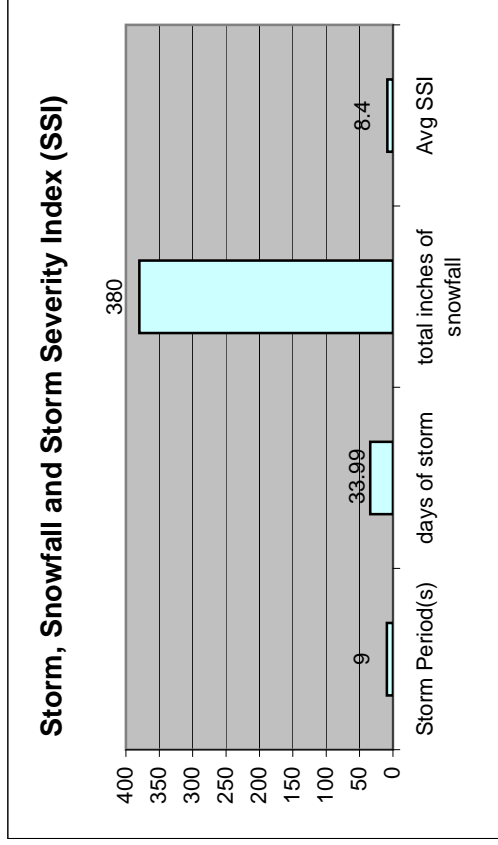
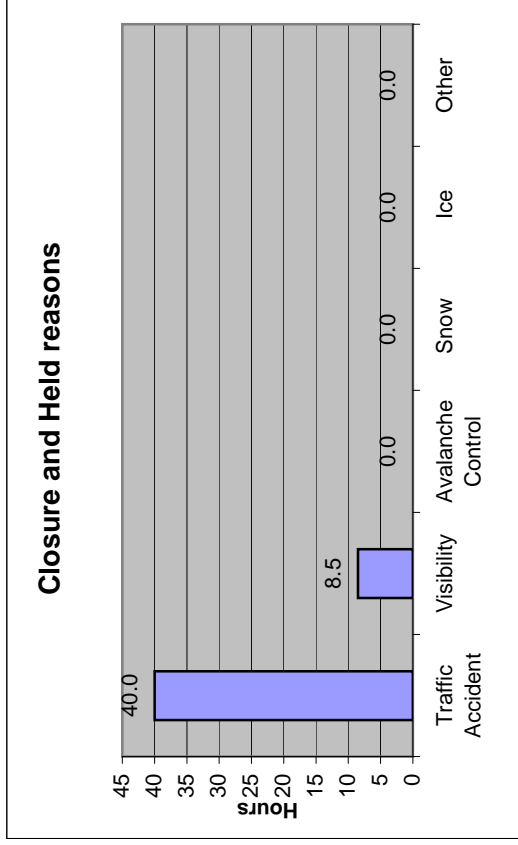
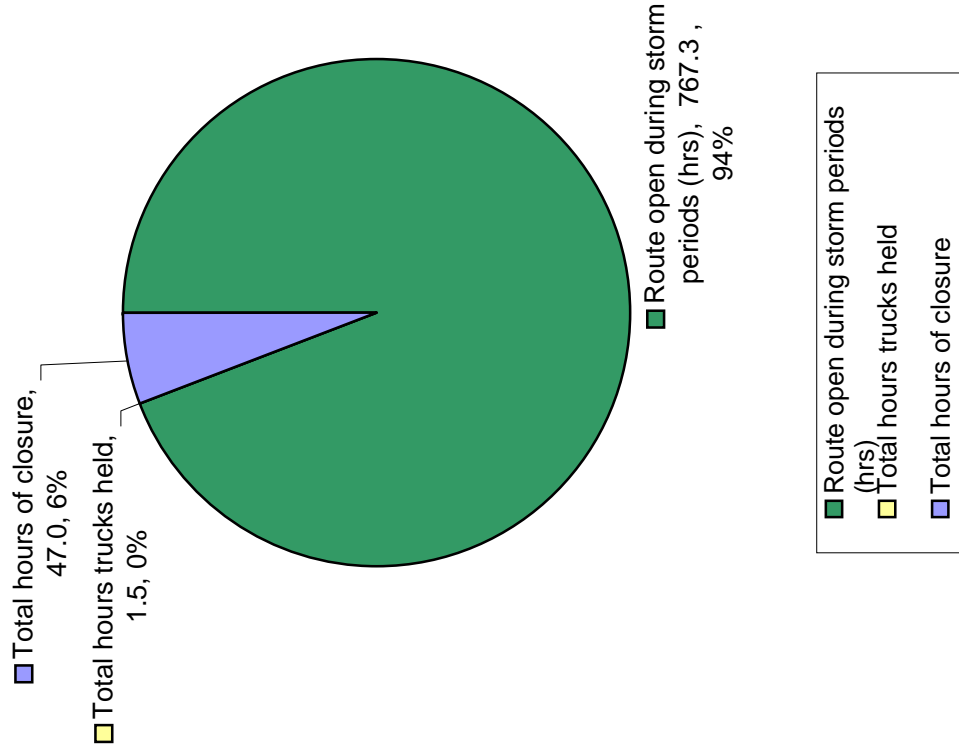
Overall Traffic Element Check



Overall Vehicles Available (%)

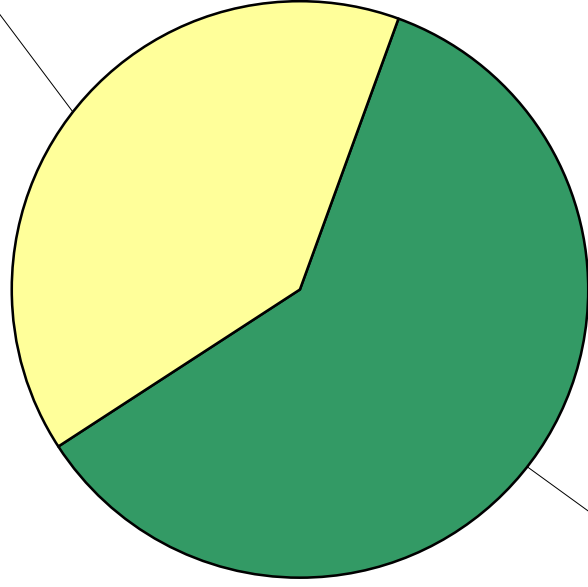


# FY 2008 - 2009 District 3, Route 80 Snow and Ice Level of Service



# FY 2008 - 2009 District 3, Route 50 Snow and Ice Level of Service

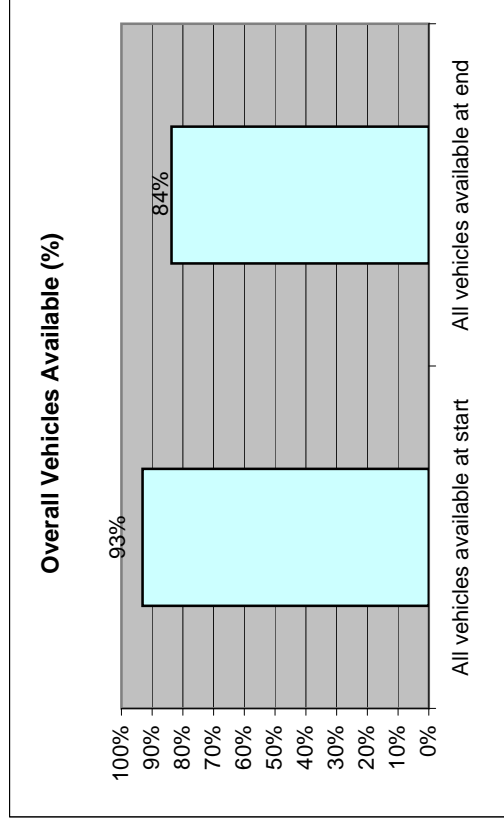
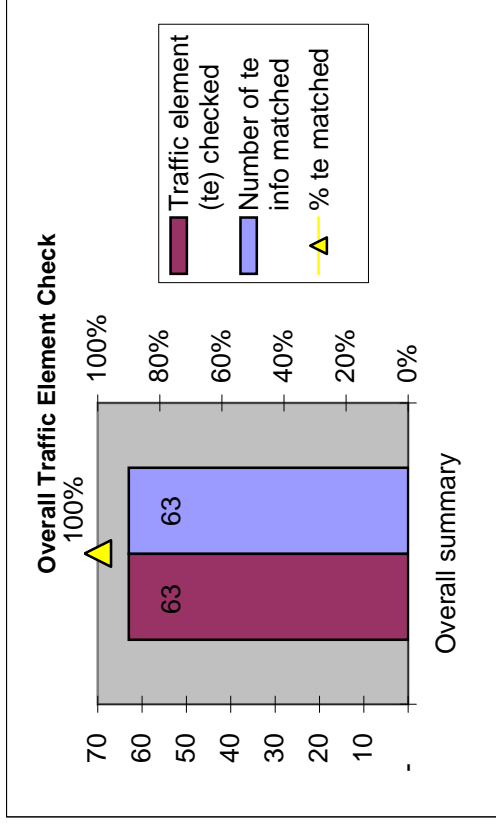
total hrs of non-Chain Control, 337.8 , 40%



total hrs of Chain Control (cc), 513.0 , 60%

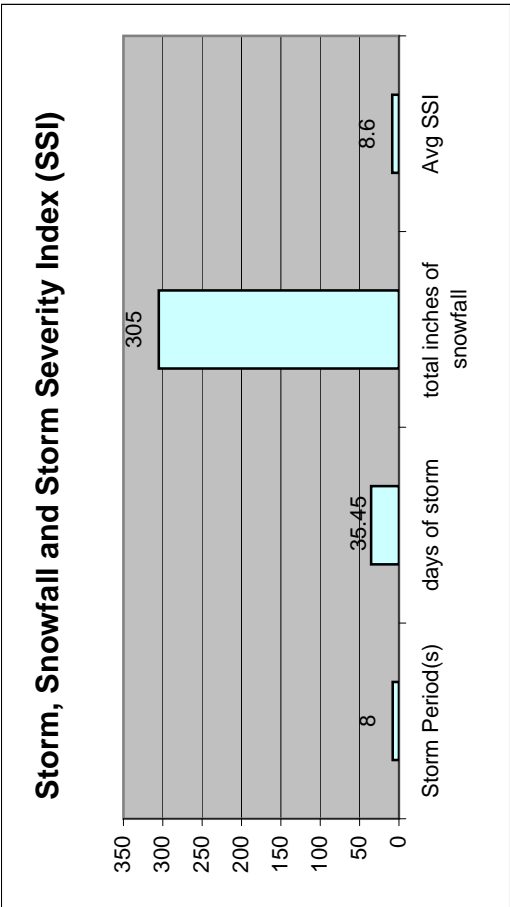
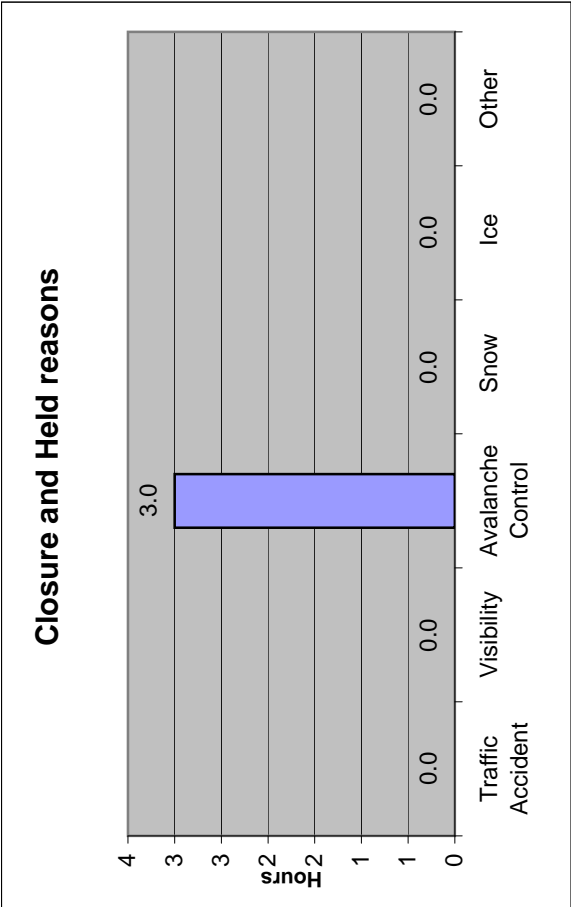
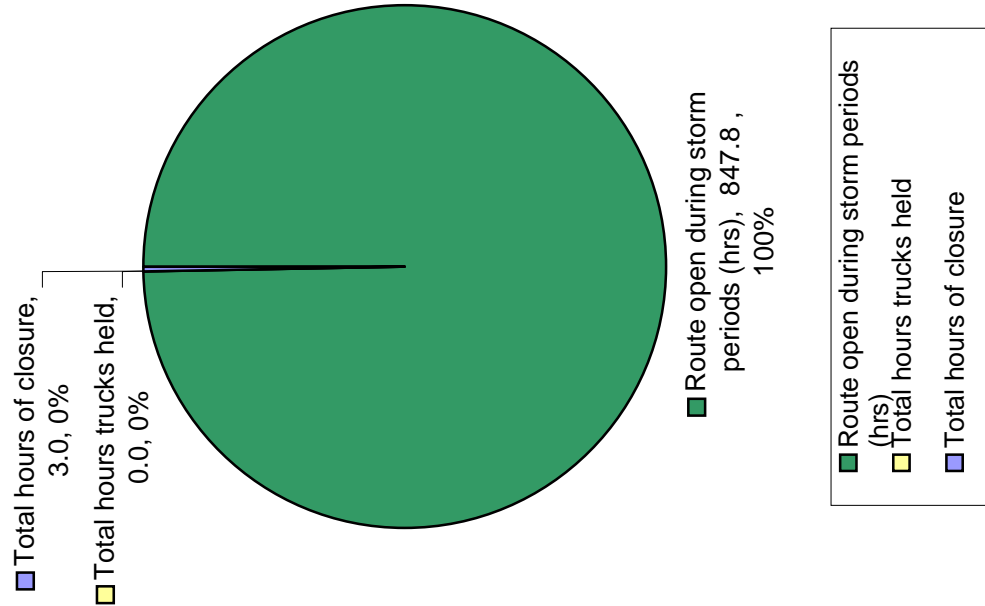
total hrs of Chain Control (cc)

total hrs of non-Chain Control

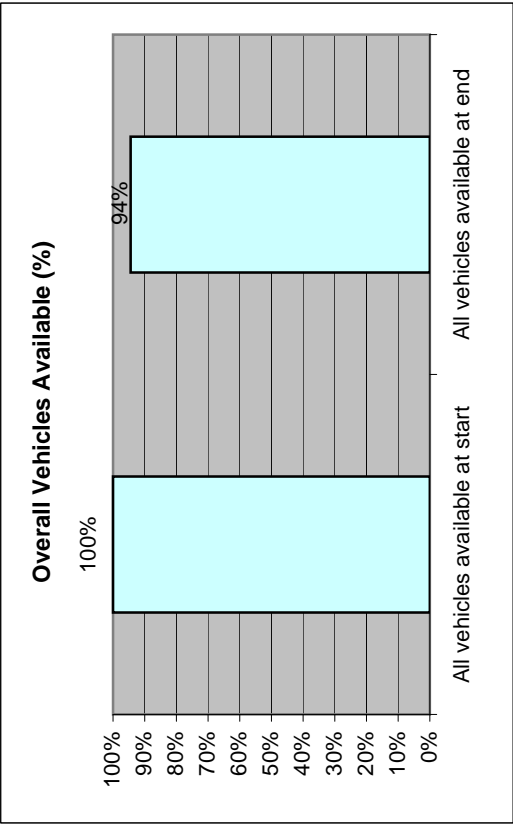
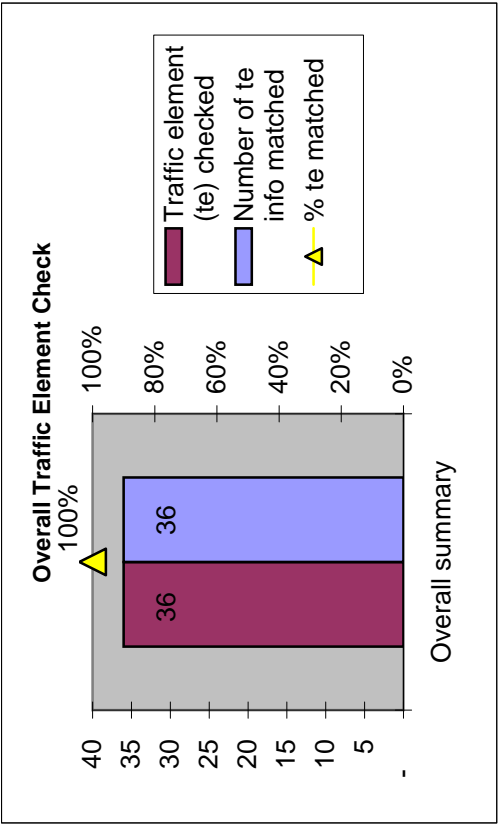
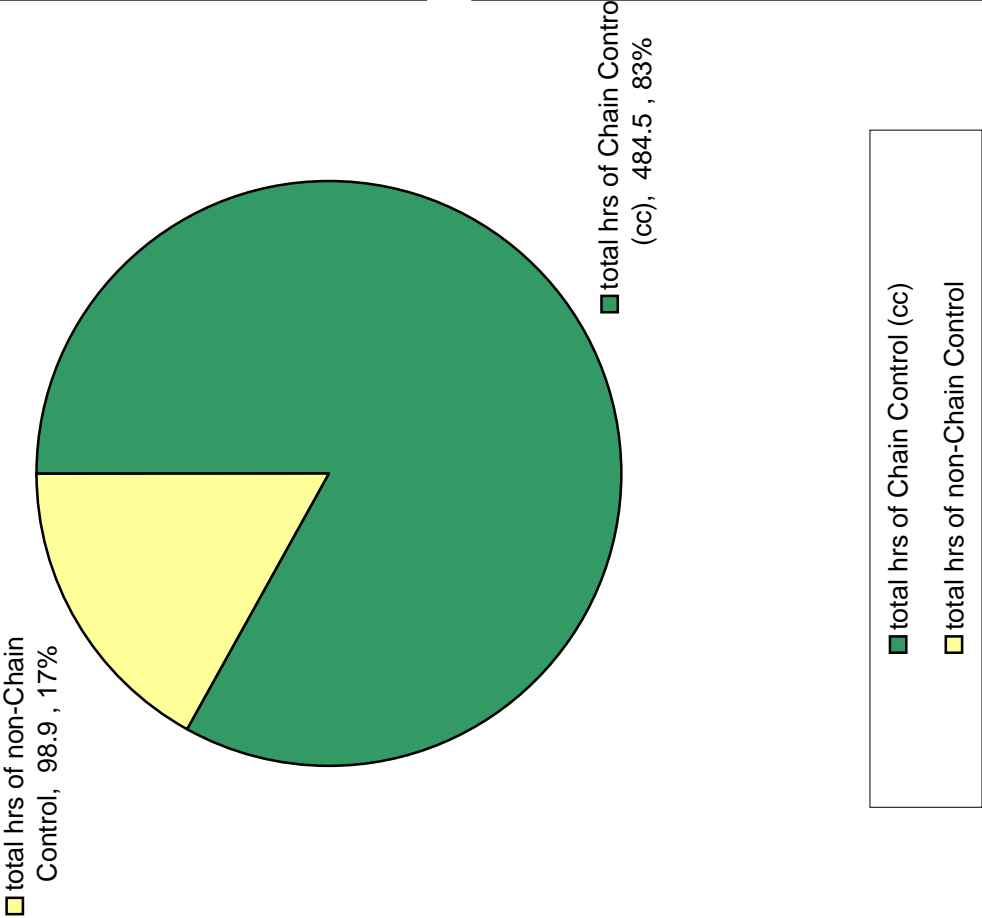




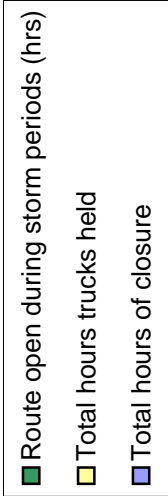
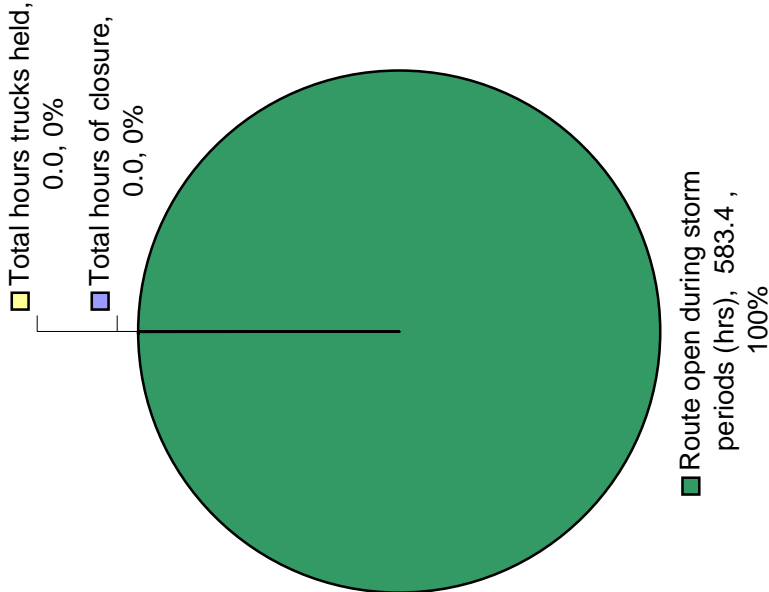
# FY 2008 - 2009 District 3, Route 50 Snow and Ice Level of Service



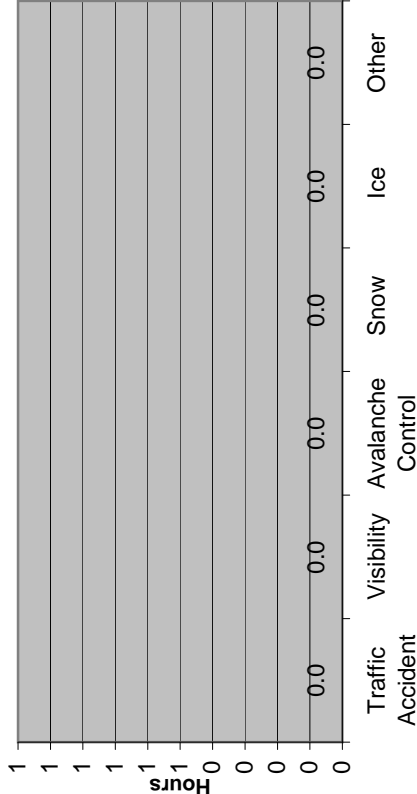
**FY 2008 - 2009 District 3, Route 32**  
**Snow and Ice Level of Service**



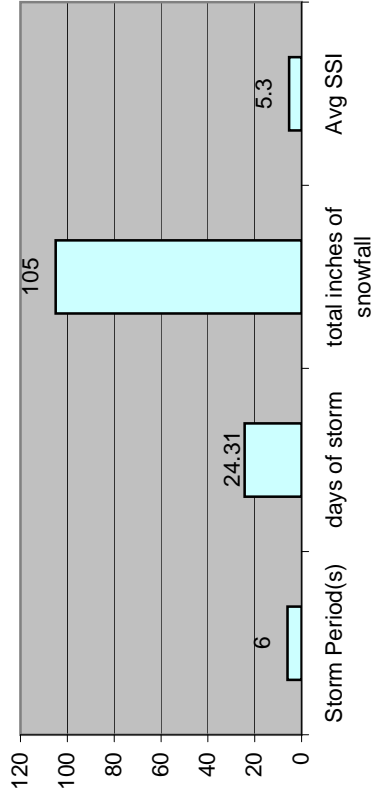
# FY 2008 - 2009 District 3, Route 32 Snow and Ice Level of Service



Closure and Held reasons



Storm, Snowfall and Storm Severity Index (SSI)





# **SECTION 2**

## **WINTER PREPARATION AND EVENT RESPONSE PLAN**

## **I. WINTER PREPARATIONS**

An effective winter snow removal program requires a year round effort. It is important that during the summer and fall months preparations are made for the upcoming winter season to ensure that necessary resources are in place when the snow starts to fall.

### **A. Staffing**

#### **August**

The region and district staff should be working on staffing plans for the upcoming winter and identify as many known snow removal employee vacancies as possible.

#### **September**

The following inquiries sent and returned to the region staff to solidify the winter vacancy numbers.

1. Intent to return to work letter to eligible temporary employees
2. Winter Post and Bid offers to Unit 12 Rank and File
3. Temporary Winter Upgrades Identified
4. Storms only volunteer list to permanent full time employees

#### **October**

The regions should advertise, conduct interviews and make appointments to fill identified vacancies, keeping in mind that there is an approximate 1-month lag period from the selection process to having the new employee report to work.

Returning temporary employees should be notified of their estimated return to work date and checked for availability to respond in the case of early fall storms.

#### **November/December**

Temporary employees should be called to work as needed.

New employees should report and start receiving necessary mandatory trainings, localized training, and relevant equipment training and qualification.

All returning employees should receive applicable refresher and mandated trainings. They also need to have their driver's license and medical cards checked to ensure they are current and the proper class for their position.

### **B. Equipment**

The Districts inventory of equipment used in snow operations number approximately 355 units. A large number of these are frequently in a state of relocation or reconfiguration in an effort to maximize utilization. Superintendents and supervisors need to work through the District Equipment Coordinator's office with any equipment changes.

**May**

Any snow equipment requiring major work beyond the capabilities of the field mechanics or local sub shops are identified and delivered to either the District 3 shop or designated vendor for repairs during the summer and fall.

Identified plow/sanders should have their sanders removed and dump beds installed to make them available for summer hauling.

Plows and other snow attachments removed from equipment for the summer should be properly mothballed until reinstalled.

**September**

Superintendents and supervisors need to start inventorying their snow equipment and its status. They should start working with the Equipment Coordinator on scheduling bed changes, back to sanding units and for the return of equipment that was loaned to other cost centers for the summer months or that was hauled away for summer repairs. Equipment that was loaned to other cost centers for the summer also need to be thoroughly pre-oped and any identified repairs accomplished before it is returned.

**October**

Superintendents and Supervisors should follow up with the District Equipment Coordinator arrangements made in September are on track and that their areas snow equipment will be in service by the November time line.

**November/December**

Snow removal equipment should be in place and ready for winter.

**C. Facilities – Maintenance Stations****Spring**

Any deficiencies and repairs that need to be accomplished during summer or fall months should be identified and submitted to the maintenance mechanic for scheduling.

**Summer/Fall**

Maintenance Supervisors should perform maintenance work within their means to the facility, driveway and parking lot. Facility drainage facilities should be cleaned and repaired, and proper storm water BMPs reinstalled.

Maintenance facilities that receive snow should install snow poles around the facility and along the driveway to assist with snow removal efforts. Snow poles also need to be installed at critical locations around the facility to mark hazards and station features that need protection from snow removal equipment or may need to be located during snow receiving months.

**D. Facilities - Dormitory/Kitchens****Spring**

Facilities that close for the summer should be properly prepared for the summer hiatus by being thoroughly cleaned and secured. The supervising cook or delegated representative should



perform a walk through of the facility with the Maintenance Mechanic and identify and document any items that need repair while the facility is off line.

#### Summer

The supervising cook needs to work with the area superintendent and region office staff to determine any staffing vacancies and their replacements. They also need to ensure food and linen purchase orders and contracts are being created and will be in place by October.

#### October/November

The supervising cook should coordinate cleaning the facility and take inventory to ensure that kitchen equipment and utensils are accounted for. They should also review the facility repair request list and determine what repair work was accomplished. During this review they should identify any old or new deficiencies that need to be repaired before the facility reopens and relate them to the Maintenance Mechanic.

The supervising cook needs to contact subordinate employees and relate a tentative start date.

### **E. Station Operations**

#### September

Superintendents and supervisors should work with the region office staff to ensure that winter purchase orders, abrasives and deicers for example are in place and that necessary service contracts, snow hauling for example are in place or in process.

#### September through November

During the months of September through November, personnel to be borrowed for snow removal operations should receive orientation, snow training and/or equipment qualification. The training operations continue as necessary during the winter

#### October

Supervisor should order winter supplies from the District Warehouse.

#### November

Maintenance Areas that work 24 hour, 7 days a week winter schedules will commence them when it is determined by the field supervision that conditions warrant. These shifts normally start in November and end in April but the actual times may vary from area to area dictated by the weather conditions.



Small Rotary Snow Blower working on US 50 at Pollock Pines, Photo by Bob Pense

## **II. EVENT RESPONSE STRATEGY**

### **Phase 1 - Weather Forecast Observation**

The Transportation Management Centers will monitor the SCAN system, weather systems, and /or the media 24 hours a day, 7 days a week for weather forecasts pertaining to the mountains and surrounding area. They will watch for any forecast indicating the possibility of adverse weather conditions that could affect the district's routes and are then responsible to distribute this information to the other dispatch centers, the on-duty field maintenance staff and other designated allied agencies as necessary.

The TMCs have the primary notification responsibility and will make all required notifications anytime a change in weather or traffic conditions requires it.

### **Phase II – Condition Evaluation**

When snow conditions are reported, observed, or the SCAN system indicates a condition may exist that could adversely impact the safe and efficient use of the highway, the on-duty Caltrans Maintenance Personnel are dispatched to the affected location to determine the appropriate level of response. If necessary, they should initiate traffic and/or chain control operations and proceed to implement the next phases of the Snow Operations Plan.

### **Phase III – Snow Personnel Activation**

During the winter months, the snow corridors in District 3 have minimum coverage crews that are kept in place 24/7, working 3-8 hour shifts (days, evening (swing), and nights (grave), as long as conditions warrant.

District 3 has determined that it is more cost effective and efficient to have the necessary snow removal personnel in place in advance of predicted storms. To this end, 24 hours prior to a predicted storm event, additional personnel resources may be called and requested to report to a snow station in advance of the storm. The number of employees needed for a particular storm is based on a formula using the estimated snow accumulations combined with the lowest elevations that snow is predicted to fall.

In the event an area superintendent determines that current resources are inadequate for a storm response, he should notify and work with the region's snow personnel coordinator for additional staffing needs.

The following are the 5 most common staffing scenarios in the district for storms. Each snow event in each snow area is unique and may require one or more or even a combination of these staffing scenarios.

1. Minimum Coverage Crews working 3-8 hours shifts, with days off (Blue Bird or Regular Shifts).
2. Minimum Coverage Crews working 3-8 hours shifts, with no days off (hard 8s).
3. Minimum Coverage Crews working 2-12 hour shifts (Storm Shifts)
4. Minimum Coverage Crews combined with a small number of additional employees borrowed from within the valley maintenance areas of the district, working 2-12 hour shifts.
5. Minimum Coverage Crews combined with a large number of additional employees working 2-12 hour shifts. These additional employees may be borrowed from within the valley maintenance areas of the district or from other districts,

Storm shifts hours in the district vary from area to area. Most of them consisting of 0800 hrs to 2000 hrs/2000 hrs to 0800 hrs, and 1200 hrs to 2400 hrs/0000 hrs to 1200 hrs. This is left to the discretion of the Region.

Prior to the activation of phase III of the plan, and the calling in of off-duty personnel on overtime, the operation should be coordinated between the superintendents and supervisors of the affected areas. A consensus of the affected superintendents and supervisors should be attained prior to initiating personnel callouts.

#### **Phase IV – Snow Removal Equipment Activation**

The activation and deployment of snow removal equipment in a particular area is directed by the Caltrans Maintenance Field Supervision for the area. Snow plowing on major routes preferably consists of groups of two (2) or more plow trucks plowing in tandem, and distributing deicers or abrasives as directed. This procedure could include escorting CHP for speed and orderly traffic control.

There will be additional individual trucks plowing and sanding on the affected ramps and secondary routes as required within the snow removal area. The main line of the route should receive the primary plowing attention and ramps, turn-outs and driveways should be plowed as conditions allow.

Chain controls may be implemented to assist in the safe flow of traffic on any route in the district that it is determined they are needed.

Graders and rotary plows may be implemented to keep the travel way in a smooth and wide condition to improve motorist control and maneuverability.



Grader peeling packed snow on US 50, East of Twin Bridges

Photo by Bob Pense

All snow equipment will receive a proper a pre-operational check at the beginning of each shift and periodically inspected during the shift. At the end of shift, the equipment should be left fueled, clean and in ready condition with a post-operational inspection performed.

All personal, who operate Caltrans vehicles and equipment must be properly licensed and qualified on the equipment they are operating.

All Caltrans personnel operating snow removal equipment should report any delays or incidents that would restrict traffic flow to their supervisor or TMC as directed.

**Phase V – Route Closure**

In the event that Phase IV proves ineffective or severe weather conditions warrant, Phase V should be implemented. Phase V should remain in effect until the condition abates and return to Phase IV can be safely reestablished.

Contact the TMC to advise that the closure/detour has been implemented, and to make appropriate notifications. Every effort needs to be undertaken to notify the public as far in advance as possible of impending closures.

**Phase VI – Post Storm Clean Up and Deactivation**

As soon as conditions allow after the storm event, the following post storm activities should occur. When possible these activities should be completed on regular bluebird shifts.

1. Additional personnel activated for the storm event should be released back to their original work locations as soon as possible.
2. Abrasives used during the storm should be retrieved and/or cleaned up in accordance with Best Management Practices (BMP) for Storm Water Guidelines. Maintenance areas in the Tahoe Basin need to perform this activity as quickly as conditions allow after a storm.
3. The snow storage areas along the shoulders and medians of routes should be reestablished if necessary.
4. Equipment should receive post storm cleaning, servicing, tire chains repaired and readied for the next storm event.
6. Snow signs and guide poles damaged during the storm event should be repaired.



Rotary Snow Blower widening on RTE 49 near Bassett's,

Photo by Steve Folsom

**III. ADDITIONAL INFORMATION****A. Anti-icers, Deicers and Abrasives**

Motorist and employee safety frequently necessitate the use of deicers and abrasives to assist in providing a more negotiable travel way and prevent major slowing of traffic flows within the snow removal areas. The use of deicers and abrasives should always be used prudently and judiciously and not distributed unnecessarily.

The primary anti-icer/deicer currently used in District 3 is salt and the primary abrasive is sand. The district is constantly pursuing alternative products in an effort to reduce the use of salt and abrasives while still providing a comparable level of safety and service.

Field supervisors are given the authority to authorize the application of anti-icers, deicers and abrasives by plow/sanders and/or distributor trucks within each territory. This responsibility is usually delegated to the route segment leadworkers. In locations where one territory leads to another on the same route, communication between the territories must be made prior to the application. Miscommunication or failure to communicate could directly impact the routes overall “storm strategy” and cause unnecessary traffic delays or chain use.

Equipment used in snow and ice control need to have their spreading units calibrated prior to use at the beginning of winter and recalibrated bimonthly as weather permits or whenever the spreading units receive mechanical repairs that affect calibration.

All employees involved with snow removal and ice control operations will spread anti-icers, deicers or deicer/abrasive combinations at instruction of the on duty supervision. Employees will be properly trained on how when and where the different types of deicers and abrasives are utilized in their areas of responsibility. Additionally, employees will also be properly trained on the equipment used in anti-icing, deicing and sanding operations and will be familiar with the required documentation pertinent deicer/abrasive use. Daily sand logs shall be completed by end of shift.

The Monthly Deicer Usage Report will continue to be required.

The decision that abrasives and deicers will be mixed at stockpile locations to prevent freezing will be done on a region basis, as the need exists. Deicer/abrasive mixtures will be used throughout the snow removal/ice control area on an as needed basis to provide a safe travel way. When applying bond breaker deicer applications, they will be applied at the beginning of a storm regardless of temperature.

In an effort to control abrasive run off due to storm water flow, straw bales and storm wattles should be placed around abrasive stock piles locations per BMP storm water requirements.

During sanding operations using a tailgate sander with the truck bed raised, operators must be alert to overhead structures or hazards. Truck beds when fully raised are approximately 17’.

The use of liquid deicers and anti-icers in District 3 will determined by each areas supervision.

## **B. Traffic Operations**

CMS signs may be activated to warn traffic they are approaching a snow area with traffic control or chain control in effect.

Mobile message boards, if available, may be placed ahead of snow operations to warn motorists of slow traffic and snow conditions.

HAR's implemented to warn motorists of changing conditions, chain controls, and current requirements, and/or closure/detour information.



Changeable Message Sign (CMS) activated along Interstate 80